

In the Claims

The following claims will replace all prior versions of the claims.

1. (Currently amended) A system for processing audio signals, comprising:
a sequence of digital filters arranged in at least one filter group, wherein each filter group processes the audio signal for a particular frequency interval at a particular sampling rate, wherein each filter in the filter group is configured to process a selected frequency that is progressively lower than a prior filter of the filter group before passing the audio signal to a next filter in the filter group; and
coefficients of each filter of the filter group configured for processing more than one frequency, wherein same coefficients are used for processing audio signals that are a factor of a frequency interval apart.
2. (Cancelled)
3. (Previously presented) The system as recited in claim 1, wherein at least one filter of the filter group is configured to process a first frequency and a second frequency that is a factor of at least one frequency interval away from the first frequency.
4. (Previously presented) The system as recited in claim 1, wherein the frequency interval is an octave.
5. (Previously presented) The system as recited in claim 3, wherein the at least one filter is configured to sample the first frequency at a first sampling rate and the second frequency at a second sampling rate.

6. (Original) The system as recited in claim 5, wherein the second frequency is lower than the first frequency and the second sampling rate is lower than the first sampling rate.
7. (Currently amended) The system as recited in claim 5, wherein the second sampling rate is lower than the first sampling rate by two raised to a ~~the~~ number of octaves spacing between the first frequency and the second frequency.
8. (Previously presented) The system as recited in claim 1, wherein the at least one filter group is configured to process frequencies in a first octave at a first sampling rate.
9. (Previously presented) The system as recited in claim 8, wherein the at least one filter group is further configured to process frequencies in a second octave at a second sampling rate.
10. (Previously presented) The system as recited in claim 1, wherein each coefficient is represented by fewer than 13 bits.
11. (Previously presented) The system as recited in claim 1, wherein each coefficient is represented by 12 bits.

12. (Currently amended) A system for processing audio signals, comprising:
a sequence of digital filters arranged in at least one filter group, each filter group configured to process a selected frequency interval, wherein each filter in the filter group includes coefficients for processing an audio signal before passing the audio signal to a next filter in the filter group, and a first filter of a first filter group configured to process a first frequency shares its coefficients with a second filter in a corresponding position of a second filter group configured to process a second frequency that is spaced apart from the first frequency by a factor of a frequency interval.

13. (Cancelled)

14. (Previously presented) The system as recited in claim 12, wherein the second frequency is spaced apart from the first frequency by a factor of at least one octave.

15. (Previously presented) The system as recited in claim 12, wherein the first filter is configured to sample the first frequency at a first sampling frequency and the second filter is configured to sample the second frequency at a second sampling frequency.

16. (Original) The system as recited in claim 15, wherein the second frequency is lower than the first frequency, and the second sampling frequency is lower than the first sampling frequency by a ratio of the first frequency to the second frequency.

17. (Previously presented) The system as recited in claim 12, the first filter group operates in a first octave and the second filter group operates in a second octave.

18. (Original) The system as recited in claim 17, wherein the filters in the first octave are sampled at a first sampling frequency that is at least twice as high as a highest frequency processed by the first octave.

19. (Original) The system as recited in claim 18, wherein the second octave is one octave lower than the first octave, and the filters in the second octave are sampled at a second sampling rate that is half as high as the first sampling frequency.

20. (Previously presented) The system as recited in claim 17, wherein each filter in the first octave shares its coefficient with each filter in a corresponding position in the second octave.

21. (Cancelled)

22. (Previously presented) A computer program product comprising a computer usable medium having machine readable code embodied therein for performing a method for processing an audio signal, the method comprising:

(a) providing a sequence of digital filters arranged in at least one filter group each filter group configured to process the audio signal for a particular frequency interval at a particular sampling rate;

(b) providing each filter with coefficients for processing its selected frequency such that a first filter of a first filter group configured to process a first frequency shares its coefficients with a second filter in a corresponding position of a second filter group configured to process a second frequency that is a factor of the frequency interval lower than the first frequency; and

(c) applying the audio signal to the sequence of digital filters, wherein each frequency is processed over 10 octaves and each octave is processed by a filter group having 60 filters.

23. (Previously presented) The system as recited in claim 1, wherein the audio signal is passed to a next filter group until processing is completed.

24. (Previously presented) The system as recited in claim 12, wherein the first filter group and the second filter group are a same filter group.

25. (Previously presented) The system as recited in claim 22, wherein the first filter group and the second filter group are a same filter group.